

**AMENDMENTS TO THE CLAIMS**

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double-bracketed text indicating deletions.

**CLAIMS:**

Claims 1-82 (Cancelled).

83. (New) An arrangement for determining positions of the teats of a milking animal in a milking system including a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising:

- a camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the camera pair is provided to repeatedly record pairs of images;
- an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein
- said camera pair is comprised of a pair of thermal or infrared cameras, each responsive to infrared radiation propagating towards the camera.

84. (New) An arrangement for determining positions of the teats of a milking animal in a milking system including a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control

device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising:

- a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images; and
- an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein
- said image processing device is provided, for each time the teats are to be detected, to apply a motion detection algorithm to reduce the area in which the teats likely are, wherein the difference between two images recorded one after the other by one camera of said first camera pair is analyzed, and the area in which the teats likely are, is reduced by discarding areas in the two images wherein substantially no movement has occurred.

85. (New) The arrangement of claim 84 wherein said image processing device is provided to reduce scatter in the reduced area in which the teats likely are by applying a relaxation algorithm.

86. (New) The arrangement of claim 84 wherein said image processing device is provided to enlarge the reduced area in which the teats likely are by a pixel expanding algorithm.

87. (New) The arrangement of claim 84 wherein

- said first camera pair is directed towards the teats of the milking animal when being located in the position to be milked is directed so that the teats of the milking animal

belong to the outer contour of the milking animal in the repeatedly recorded pairs of images; and

- said image processing device is provided to further reduce the area in which the teats likely are by a contour creation algorithm.

88. (New) The arrangement of claim 84 wherein said image processing device is provided, for each time the teats are to be detected, to apply an edge detection algorithm based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

89. (New) The arrangement of claim 88 wherein said image processing device is provided, for each time the teats are to be detected, to apply a Canny detection algorithm to thereby find edges in a recorded pair of images that most likely include those of the teats of the milking animal.

90. (New) The arrangement of claim 88 wherein said image processing device is provided, for each time the teats are to be detected, to apply a labeling algorithm for calculating features of the found edges and corners in the recorded pair of images.

91. (New) The arrangement of claim 90 wherein said image processing device is provided, for each time the teats are to be detected, to apply a hierarchical chamfer matching algorithm for identifying edges and corners of the found edges and corners in the recorded pair of images which belong to the teats of the milking animal based on said calculated features.

92. (New) The arrangement of claim 85 wherein said image processing device is provided to enlarge the reduced area in which the teats likely are by a pixel expanding

algorithm.

93. (New) The arrangement of claim 85 wherein

- said first camera pair is directed towards the teats of the milking animal when being located in the position to be milked is directed so that the teats of the milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images; and
- said image processing device is provided to further reduce the area in which the teats likely are by a contour creation algorithm.

94. (New) The arrangement of claim 86 wherein

- said first camera pair is directed towards the teats of the milking animal when being located in the position to be milked is directed so that the teats of the milking animal belong to the outer contour of the milking animal in the repeatedly recorded pairs of images; and
- said image processing device is provided to further reduce the area in which the teats likely are by a contour creation algorithm.

95. (New) The arrangement of claim 85 wherein said image processing device is provided, for each time the teats are to be detected, to apply an edge detection algorithm based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

96. (New) The arrangement of claim 86 wherein said image processing device is provided, for each time the teats are to be detected, to apply an edge detection algorithm

based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

97. (New) The arrangement of claim 87 wherein said image processing device is provided, for each time the teats are to be detected, to apply an edge detection algorithm based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

98. (New) The arrangement of claim 89 wherein said image processing device is provided, for each time the teats are to be detected, to apply a labeling algorithm for calculating features of the found edges and corners in the recorded pair of images.

99. (New) An arrangement for determining positions of the teats of a milking animal in a milking system including a robot arm for automatically attaching teat cups to the teats of a milking animal when being located in a position to be milked, and a control device for controlling the movement of said robot arm based on determined positions of the teats of the milking animal, said arrangement comprising:

- a first camera pair directed towards the teats of the milking animal when being located in the position to be milked, wherein the first camera pair is provided to repeatedly record pairs of images;
- an image processing device provided for repeatedly detecting the teats of the milking animal and determining their positions by a stereoscopic calculation method based on said repeatedly recorded pairs of images, wherein
- said image processing device is provided, for each time the teats are to be detected, to

apply an edge detection algorithm based on the phase congruency model of feature detection to thereby find edges and corners in a recorded pair of images that most likely include those of the teats of the milking animal.

100. (New) The arrangement of claim 99 wherein said image processing device is provided, for each time the teats are to be detected, to apply a Canny detection algorithm to thereby find edges in a recorded pair of images that most likely include those of the teats of the milking animal.

101. (New) The arrangement of claim 99 wherein said image processing device is provided, for each time the teats are to be detected, to apply a labeling algorithm for calculating features of the found edges and corners in the recorded pair of images.

102. (New) The arrangement of claim 101 wherein said image processing device is provided, for each time the teats are to be detected, to apply a hierarchical chamfer matching algorithm for identifying edges and corners of the found edges and corners in the recorded pair of images which belong to the teats of the milking animal based on said calculated features.

103. (New) The arrangement of claim 100 wherein said image processing device is provided, for each time the teats are to be detected, to apply a labeling algorithm for calculating features of the found edges and corners in the recorded pair of images.